Neglect of Opportunity Costs in Consumer Choice

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To properly consider the opportunity costs of a purchase, consumers must actively generate the alternatives that it would displace. The present research suggests that they do not routinely do so. Even under conditions promoting cognitive effort, merely reminding consumers that money would remain if a purchase were foregone enhances their consideration of outside goods, diminishes willingness to purchase a presented item, and increases preference for cheaper options.

Students of economics are taught that the costs relevant to decisions are opportunity costs—the unrealized flow of utility from the alternatives a choice displaces.[1] Consumers are assumed to equate the marginal utility per dollar spent across all categories of expenditures (Samuelson and Nordhaus 1989, 450). This feat requires thorough consideration of opportunity costs, since the process of equating entails a process of comparing—comparing, say, the utility derived from a caramel macchiato with the utility derived from spending that $3.78 in any number of other ways. In this paper, we equate considering outside goods with considering opportunity costs.

The assumption that consumers carefully consider the opportunity costs of a decision is not only upheld as a "law" of consumer behavior applied to idealized consumers in economic textbooks, but appears to be widely assumed about actual consumers. For example, Becker, Ronen, and Sorter (1974) contend "Decision makers confronted with a showcase of beluga caviar consider how much hamburger they could buy with the money [that] a pound of caviar costs…People intuitively take opportunity costs into account." Okada and Hoch (2004) similarly conclude, "The opportunity cost of money is easy to assess. Money has a readily exchangeable market, is highly liquid and fungible, and can be saved. A dollar is a dollar...and so what comes to mind as the next best use for money remains fairly constant across situations."

Such assertions cannot be easily reconciled with an experience one of us had while shopping for stereos. Frozen in indecision between a $1000 *Pioneer* and a $700 *Sony*, the salesman intervened, framing the choice as follows: "Well, think of it this way—would you rather have the *Pioneer* or the *Sony* and $300 worth of CD's?" Remarkably, the choice which

[1] The opportunity cost of some event (such as the purchase of a product) has been variously defined as "the highest valued opportunity necessarily forsaken" (Alchian 1968), the "chooser's evaluation of the alternative that must be sacrificed in order to attain that which is selected" (Buchanan 1969), or "the value of choosing from among the remaining alternatives" (Nozick 1977).

seemed so difficult just moments before was no longer even close—the *Sony* was at the cash register the moment after the word CD's escaped his mouth. A big pile of new CD's seemed far too steep of a price to pay for the *Pioneer*'s slightly more attractive speakers.

The consumer in the foregoing story could subtract $700 from $1000, and was capable, in principle, of recognizing that $300 can be used to purchase $300 worth of CDs. Nevertheless, that particular perspective was overlooked despite nearly an hour of contemplating the choice. As suggested by the anecdote above, we propose that consumers may not consider opportunity costs as economics textbooks hypothesize and as consumer behavior researchers often assume. As a result, consumer preferences can be influenced by various manipulations that highlight opportunity costs, as we demonstrate in the studies reported below.

NEGLECT OF OPPORTUNITY COSTS

In accounting parlance, fines, bills and other negative cash flows are termed "out-of-pocket" costs, in contrast with "opportunity costs," which refer to the absence of potential positive cash flows (e.g. the rent that is not collected when a building is used for storage). In this paper, we propose that opportunity costs are not merely underweighted relative to some corresponding loss (as argued by Thaler, 1980), but that consumers may not even typically think about purchases in these terms. The fact that prices deter purchase does not mean that they do so through recognition of opportunity costs. Consumers' sensitivity to price may originate from some vague recognition of sacrifice, but that needn't mean that consumers' "pain of paying" (Prelec and Loewenstein,1998; Rick, Cryder, & Loewenstein) derives from consideration of specific alternative uses for that money.

Unlike a good's monetary cost, which is a conspicuous element of most purchase decisions, consideration of opportunity costs requires consumers to envision or generate alternatives beyond those explicitly presented. Many experimental paradigms cast doubt on the pervasiveness of such considerations, by finding that decision makers restrict their thoughts to salient situational elements and neglect relevant information that remains implicit (Kahneman and Frederick 2002; Slovic 1972). For example, when participants were permitted to ask questions about some opportunity (such as going to see a film in a foreign city) before deciding whether to do it, their inquiries pertained almost exclusively to the focal event rather than to possible alternatives (such as visiting a museum or attending a sporting event; Legrenzi, Girotto, and Johnson-Laird 1993). In studies of probability judgments, outcomes not explicitly represented are often ignored or underweighted (Fischhoff, Slovic, and Lichtenstein 1978; Tversky and Koehler 1994). In research on affective forecasting, judgments about one's current or future well-being are excessively sensitive to current mood or the domain which the research instrument happens to make momentarily accessible, to the neglect of various other relevant factors (e.g., Amir, Ariely, and Carmon 2007; Loewenstein and Frederick 1997; Schkade and Kahneman 1998; Schwarz and Clore 1983; Wilson et al. 2000). In research on intertemporal choice, Loewenstein and Prelec (1993) found that consumers chose differently when the implicit alternative to dining out was explicitly described as "eating at home."

The repeated finding that people focus only on explicitly presented details and fail to spontaneously "fill in" the logical entailments of a choice or judgment suggests opportunity costs are likely to be neglected, since considering the cost of the opportunity requires decision makers to actively generate alternatives that are not explicitly provided. Thus, prompts to consider opportunity costs, as used by the stereo salesman, should evoke thoughts about alternative uses

of money that consumers would not have generated themselves. This, in turn, should deter any focal purchase and make cheaper options more attractive than expensive options.

The stereo salesman's suggestion that the $300 price difference could be used on CD's (rather than on the more expensive stereo) may have been particularly effective because CD's are complementary to the stereo. Even if our narrator had spontaneously conjured alternate uses for the $300, he may not have considered anything as attractive as the CD's. However, our experiments suggest that consumers may fail to spontaneously consider *any* outside opportunities, and that any sort of reminder about opportunity costs will influence choice, even the placebic reminder that money preserved by foregoing some purchase will still be available for other purchases.

In studies 1a-1c, we show that purchase rates are reduced when the "not buy" option is described as "keeping money for other purchases," and preferences shift toward cheaper options when the price difference is made explicit even without mentioning other purchases. Study 2 argues against another account: that highlighting a price difference segregates it from the total price and makes it more impactful. Study 3 provides direct evidence that specifying the price difference as residual cash prompts thoughts of purchasing outside goods and suggests that the efficacy of such prompts remains even under conditions promoting deliberation. Study 4 shows that opportunity costs can be highlighted merely by priming alternative uses of money outside the purchase context. The final study shows that sensitivity to manipulations highlighting opportunity costs are moderated by individual differences in the "pain of paying." We conclude by discussing the relevance of our results for managers and questions for future research.

STUDY 1A: THE EFFECT OF OPPORTUNITY COST SALIENCE ON WILLINGNESS TO PURCHASE

In the first study, we tested whether a "take it or leave it" purchase decision can be influenced by a minimal prompt to consider opportunity costs -- specifically by framing "not buying" as "keeping money for other purchases" (without suggesting any particular use of the money). If opportunity costs are spontaneously considered, this prompt should have no effect. However, we hypothesize that opportunity costs are routinely neglected and this prompt will diminish interest in a focal purchase.

Method

One hundred fifty students at a southwestern university were asked to imagine they could purchase a DVD for $14.99. Each was randomly assigned to one of two conditions in which the decision against purchasing was worded either "Not buy" or " Keep the $14.99 for other purchases." The two descriptions are, of course, normatively equivalent, since "not buying" implies keeping the money for other purchases.

> Imagine that you have been saving some extra money on the side to make some purchases, and on your most recent visit to the video store you come across a special sale on a new video**.** This video is one with your favorite actor or actress, and your favorite type of movie (such as a comedy, drama, thriller, etc.). This particular video that you are considering is one you have been thinking about buying a long time. It is available at a special sale price of $14.99.
>
> What would you do in this situation? Please circle one of the options below.
>
> (A) Buy this entertaining video
>
> (B) Not buy this entertaining video [Keep the $14.99 for other purchases]

Results and Discussion

Although the principal reason against purchasing an entertaining video (or any other good) is presumably to save the money for something else, describing the "Not buy" option as "keeping money for other purchases" caused willingness to purchase to fall from 75% to 55% ($\chi^2(1) = 6.57$, $p < .05$). We found similar results for choices involving a dinner event or a pair of sunglasses. Such manipulations should have no effect if participants spontaneously considered outside goods before rendering their decisions, and thus, provides some evidence that they do not.

Study 1B: Opportunity Cost Salience Enhances Preference for the Cheaper Option

Our second study extended this effect from "take it or leave it" decisions to decisions between explicitly presented options. It could be that in choices with more than one good, consumers begin a comparison process that ultimately includes goods outside the immediate purchase context. Our next study examines a choice between two options to test whether outside goods are spontaneously considered or opportunity costs are neglected in this type of choice.

Another purpose of this study is to examine an alternative explanation for study 1. In that study, those who saw the phrase “keep the $14.99 for other purchases” may have felt that the experimenter wanted them to save money or was suggesting that not buying was the better option. In particular, they may have been primed to think about frugality or even made to feel guilty if they chose to purchase. In study 2, we verify that our manipulation does not affect thoughts about guilt and frugality to ensure that these are not responsible for the observed shift in preferences.

Method

The scenario below was presented to 132 participants as part of a longer web-based questionnaire. For half of the participants, the price difference between two stereos was left implicit; for the other half it was highlighted with the phrase "leaving you $300 in cash."

> Imagine that you are a student at the start of the school year shopping for a new stereo system for your entertainment needs, and have just won $1000 cash in a raffle. You are considering the following options. (Circle the option you would prefer.)
>
> ***Option A:*** *A $1000 stereo system. The system has a 60 watt per channel amplifier, a 6-disc CD changer, and a digital AM/FM tuner.*
>
> ***Option B:*** *A $700 stereo system* **[leaving you $300 in cash]**. *The system has a 30 watt per channel amplifier, a 5-disc CD changer, and an analogue AM/FM tuner.*

Results and Discussion

Though there was no explicit prompt to consider other uses for that money (as in the preceding study), merely describing the cost difference as a residual cash amount increased the choice share of the cheaper stereo from 53% to 77% ($\chi^2(1) = 8.54$, $p < .01$). Apparently, just mentioning the cost savings encourages participants to consider alternate uses of that money that they overlook when the difference is left implicit, thereby making $300 seem too steep a price to pay for the additional features of the expensive option.

If our manipulation of the options' descriptions is construed as emphasizing the importance of saving money, our results might be understood as a type of demand effect. However, we later presented the stereo scenario to 78 more participants, assigning half to the control condition and half to the "residual cash" condition. We then asked them to report (on nine point scales ranging from 1= *not at all* to 9 = *extremely*): 1) the extent to which they would feel guilty about choosing Option A 2) the extent to which they would feel choosing Option A is a frivolous purchase and 3) how important they think being frugal is when making a purchase

decision. All three ratings showed no difference across the two experimental conditions. Specifically, participants did not feel more guilty about choosing the expensive stereo in the opportunity cost condition than in the control condition (M_{oc} = 4.65 vs. $M_{control}$ = 5.03; $t(76) < 1$). Nor did they feel choosing the expensive stereo was more frivolous when opportunity costs were made salient compared to when they were not (M_{oc} = 5.88 vs. $M_{control}$ = 5.53; $t(76) < 1$). Finally, participants did not feel differently about frugality when making a purchase decision across the two conditions ($M_{control}$ = 6.37 vs. M_{oc} = 6.18; $t(76) < 1$). These results argue against the idea that the materials provided cues about the importance of saving money.

Study 1C: Opportunity Cost Salience in Consequential Choice

Our first two studies involved hypothetical choices, and there are several possible reasons that the results of those studies would not extend to consequential choices. First, consequential choices are less likely to be influenced by participants' attempts to please the experimenter by guessing which option is being subtly framed as the best option. Because they have to live with the consequences, participants are more likely to honor their own preferences in a real choice. Second, the effects observed in the first 2 studies may be due at least in part to participants' lack of effort when thinking about hypothetical choices. The present study by including real consequences may increase participants' motivation to a point where they spontaneously consider opportunity costs without external prompts.

Method

Eighty-eight students at a southwestern university first participated in an unrelated study in which they were each paid $10 cash for their participation. The students were then informed that they would make an actual decision using the money they had just received from the prior experiment. In one condition, their choice was between an insulated metallic portable coffee mug for $10, and a simpler ceramic mug for $3.99. In the second condition, the choice was the same, but the description of the cheaper mug included the phrase, "...leaving you with an extra $6.01 in cash to spend on something else."

Results and Discussion

The effects observed in the first two studies persisted. Though real money and real mugs were at stake, highlighting opportunity costs increased the choice share of the cheaper option from 40% to 60% ($\chi^2(1) = 3.63$, $p = .05$). This result casts doubt on the idea that our opportunity cost salience manipulation is merely communicating the experimenter's attitude toward the options. It also suggests that a lack of effort is not responsible for the failure to spontaneously consider opportunity costs.

STUDY 2: EXPLORING A SEGREGATION ACCOUNT OF THIS EFFECT

Thaler (1985) invoked the prospect theory value function (Kahneman and Tversky 1979), to propose that small amounts of money have greater impact when segregated from a larger amount in which they are embedded. He found, for example, that a pair of outcomes (losing $200 and getting $25) was judged to be more attractive than the combined outcome (losing $175). In other words, $25 has a greater impact as a separate gain than as a reduction of a larger

loss. Our results could be interpreted similarly: explicitly mentioning $300 in cash might segregate this amount from the total cost, thereby increasing the impact of the savings and, in turn, the attractiveness of the cheaper option. To test this, we introduce here a third condition which also explicitly mentions the price difference, but in a way which less readily prompts consideration of alternative uses for money saved. Specifically, we added the phrase "spend $300 more" to the description of the expensive option, to frame the price difference as the price premium needed to purchase the superior stereo. This segregates the price difference from the prices, but less readily invites thoughts about alternative uses, since it identifies how the segregated sum will be spent (on the more expensive stereo).

If the prior results can be explained by segregation, the choice share of the cheaper stereo should increase whether the additional cost of the expensive stereo is segregated in the form of a *premium* ("spend $300 more") or a *discount* ("leaving you $300"). By contrast, our opportunity cost account predicts that only the discount manipulation will influence preferences.

Method

We randomly assigned 110 students in an MBA marketing class to receive one of three versions of a choice between two stereos (see below). The preamble in each case was the same: *Suppose you have just won $1000 playing a scratch off lottery ticket and are shopping for a new stereo system. Check the option you would choose*. The only difference was the way in which the options were described, as shown below

Control condition

A $700 stereo system with a 30 watt per channel amplifier and a 5-disc CD changer.

A $1000 stereo system with a 60 watt per channel amplifier and a 6-disc CD changer.

Price Premium condition

A $700 stereo system with a 30 watt per channel amplifier and a 5-disc CD changer. Spend $300 more for a $1000 stereo system with a 60 watt per channel amplifier and a 6-disc CD changer.

Opportunity Cost condition

A $1000 stereo system with a 60 watt per channel amplifier and a 6-disc CD changer. A $700 stereo system with a 30 watt per channel amplifier and a 5-disc CD changer, leaving you $300.

Results and Discussion

The cheaper stereo was chosen more often in our standard opportunity cost condition than in either the control condition (82% vs. 59%; $\chi^2(1) = 4.47$, $p < .05$) or the price premium condition (82% vs. 51%; $\chi^2(1) = 8.31$, $p < .01$). Importantly, the price premium condition did not differ significantly from the control condition (51% vs. 59%; $\chi^2(1) = 0.47$, $p = .5$), which argues against a segregation interpretation.

STUDY 3: A DIRECT MEASURE OF OPPORTUNITY COST SALIENCE

Thus far, our studies demonstrate that purchase decisions are influenced by subtle prompts to consider opportunity costs. These findings are consistent with the notion that individuals neglect information that remains implicit, while retaining the ability to recognize its relevance when the choice is framed in those terms. However, as the anecdote of our tortured stereo shopper suggests, an encouragement to think more carefully or process more deeply is no

guarantee that a consumer will strike upon opportunity costs. Thus, we predicted that the opportunity cost manipulation would continue to be influential even under conditions encouraging more thorough processing. In Study 3, we encourage participants to carefully consider the decision by first recording advantages and disadvantages of each option. Besides providing a means of enhancing cognitive effort, this provided a check of whether our opportunity cost manipulation does, in fact, increase consideration of outside goods.

Method

Two hundred thirty-five students were randomly assigned to one of four conditions of a 2X2 between-subjects design which crossed our opportunity cost manipulation (whether the price difference was left implicit, or emphasized by adding the phrase "leaving you $300 in cash") with a cognitive involvement manipulation. Those assigned to the low involvement conditions simply made a choice. Those in the high involvement conditions first listed all the advantages and disadvantages they could generate for each option.

Results and Discussion

The cheaper stereo was chosen more often in the opportunity cost condition than in the control condition whether involvement was low (87% vs. 66%; $\chi^2(1) = 4.30$, $p < .05$) or high (86% vs. 70%; $\chi^2(1) = 6.77$, $p < .05$).[2] A logistic regression revealed a significant main effect of the opportunity cost manipulation ($\beta = 1.21$, $p < .05$), but no effect of involvement ($\beta = 0.17$, $p > .6$), and no interaction ($\beta = 0.18$, $p > .8$).

[2] In a separate study, we also tested whether the imposition of cognitive load (holding a long number in memory) would further amplify the effect of the opportunity cost manipulation. It did not.

Although participants generated essentially the same *number* of thoughts in the control condition (4.04) and the opportunity cost condition (4.12, $t(71) < 1$), the *content* of those thoughts differed as expected. In the opportunity cost condition, participants were significantly more likely to mention other goods (e.g., "I'll have leftover money to buy CDs", "I'll have $300 for shopping for clothes") as a consideration of which stereo they would purchase (30% vs. 13%, $\chi^2(1) = 6.35$, $p < .05$). A Sobel test confirmed that the mention of outside goods was a significant mediator of stereo choice ($z = 1.6$, $p = .05$, one-tailed). This provides further evidence that our manipulation is influencing choice by prompting thoughts about outside goods.

STUDY 4: PRIMING OPPORTUNITY COSTS

Study 4 introduces another manipulation of opportunity cost salience. The previous studies attempted to manipulate the salience of opportunity cost by subtly changing the description of the options. In this study, we attempted to do so by asking some participants to list several things they would like to buy (in an ostensibly unrelated study) before making the focal choice. This manipulation not only tests another way to increase opportunity cost salience, it also avoids concerns about the previous manipulation operating by subtly communicating what the experimenter thinks is the better choice.

Method

As part of a large packet of questionnaires that participants were paid $5 to complete, 150 undergraduate students chose between a pair of cell phones, with the higher quality option costing $20 more. Half of the participants were randomly assigned to a condition where the cell

phone choice was preceded by a seemingly unrelated study that asked them to list several items costing around $20 that they would like to buy. The remaining participants chose a cell phone without listing other products.

Results

All participants who were asked listed at least 1 item costing around $20 that they would like to buy. Participants in this condition chose the cheaper cell phone significantly more frequently (47%) than those in the other condition (30%, $\chi^2(1) = 4.11$, $p < .05$). This manipulation is less susceptible to concerns about experimental "demand", as the previous study was presented as being unrelated to the question involving cell phone choice.

STUDY 5: INDIVIDUAL DIFFERENCES MODERATE OPPORTUNITY COST SALIENCE MANIPULATION

We've argued that many consumers do not routinely construe purchase decisions in terms of opportunity costs. Of course, this tendency may vary across individuals. Recent studies suggest chronic differences in the extent to which consumers experience "pain" when paying for a good (Rick, Cryder, and Loewenstein 2008). We propose that this pain is determined in part by the degree to which a consumer focuses on the opportunities given up. Correspondingly, we predict that "tightwads" who experience greater "pain of paying" will be less affected by manipulations that increase the salience of opportunity costs, because they are more prone to think about purchases this way naturally without the intervention of external prompts. Study 5 tests this idea.

Method

Three hundred participants in a web-based questionnaire completed a 4-item "Spendthrift-Tightwad" scale (Rick, Cryder, and Loewenstein, 2008) intended to characterize people according to their self-reported ease or difficulty spending money. Prior to completing this scale, participants encountered the "stereo" scenario described earlier, and received either the control condition in which the price difference was left implicit or the residual cash condition in which opportunity costs were emphasized by adding the phrase “leaving you $300 in cash” to the description of the cheaper option.

Results and Discussion

Participants were classified into Tightwads or Spendthrifts based on their composite score on the 4-item measure ($\alpha > .7$) using the definition from Rick et al (2008). We then conducted a binary logistic regression to assess the impact of the opportunity cost salience manipulation, tightwad versus spendthrift and the interaction between these two. This analysis revealed a significant main effect of opportunity cost salience ($B = 1.51$, $p < .001$), and a marginally significant interaction ($B = .75$, $p = .08$). To understand the nature of the interaction effect, we examined the percentage of participants choosing the cheaper option in each condition. For tightwads, we found that our opportunity cost salience manipulation had a small non-significant effect. Among those for whom opportunity costs were made salient, 80% chose the cheaper option compared to 65% in the control condition ($\chi^2(1) = 1.84$, $p > .15$). For spendthrifts, our manipulation had a significant effect; 87% of those in the opportunity cost salience condition chose the cheaper option, compared to only 41% in the control condition ($\chi^2(1) = 14.7$, $p < .001$).

The finding that external prompts to consider opportunity costs affect tightwads less suggests that tightwads may naturally construe purchase decisions in terms of opportunity costs.

GENERAL DISCUSSION

Most research in consumer choice explicitly specifies the options for participants to consider and compare (e.g., Bettman, Luce, and Payne 1998; Ratner, Kahn, and Kahneman 1999). However, in real life, consumers must often generate alternatives themselves (Jones et al. 1998; Keeney and Raiffa 1983; Tor and Bazerman 2003). Thus, the way in which people do (or do not) generate alternatives is an important topic for both decision theorists and marketers.

To appropriately compute opportunity costs, consumers must generate alternatives and successively simulate the utility of various combinations against the utility of the focal good whose purchase is being considered. Our research challenges the widespread presumption that consumers can and do intuitively perform this procedure. We found that even minimal prompts to consider opportunity costs reduced the likelihood of purchasing a given product (study 1) and increased the choice share of the cheaper option (studies 1-5). Study 2 suggests that our effects are not readily attributable to enhanced price salience or to the segregation of the price difference from the total price. Studies 1c and 3 show that descriptions which highlight opportunity costs are effective even under conditions that promote deliberation and cognitive effort. The open-ended responses in study 3 confirm our assumption that even references to the cost difference elicits consideration of outside goods. Study 4 shows that opportunity cost salience can carryover to a purchase decision after being primed in an unrelated task. Study 5 shows that some consumers are more likely than other consumers to consider opportunity costs on their own.

Unlike the salesman in the motivating anecdote, several of our manipulations left the alternative uses unspecified, framing the savings as a residual sum of money to be spent on other things. Would the salesman's suggestion to use the price difference on a $300 dinner have been as effective as his suggestion to use it on CD's? Is any specific proposal sufficient to engage broader thinking about alternatives or would consumers fixate on the specific item proposed, as suggested by much decision research? Consider the following example as an illustration of the difficulty of going beyond suggested opportunities and attempting a full consideration of opportunity costs. Shortly after having had the stereo experience, our narrator purchased a $3 cognac truffle, which he quickly consumed. Afterward, his friend asked him "Was it worth the money?" Before responding, he first considered what else he could have purchased with $3 – four *Snickers* bars, a copy of *The Sporting News*, or a finer glass of wine with dinner. Or he could save the money – it's not much, but along with other sacrifices, maybe he could get a bigger apartment next year. He also recalled that satellite TV costs $49 a month, and that he'd hardly been watching any TV lately. With the $49 he'd save, he could have all the truffles he wants.... Bested by his friend's question, recognizing that such thoughts could go on endlessly, he finally admitted, "I don't know." This example suggests that, even after being cued to particular opportunities, consumers may not take the next step and generate other opportunities because of the endless process they would be starting. In a study not reported above, the "residual cash" manipulation was much less effective when the provided example for how the $300 could be spent was unattractive (specifically, a weekend trip to Des Moines, Iowa). Thus it is possible that opportunity costs might even be instantiated in a way that increases propensity to spend. For example, on one ostensibly anti-war website, the cost of the war in Iraq (then estimated at $300 billion) was illustrated as the loss of nine Twinkies per American per day for a

year – a rather unimpressive "opportunity cost" that could perversely increase support for that war. Similarly, relief agencies often frame requests for donations to impoverished children in terms of small opportunity costs ("For the price of a cup of coffee, you could …"), though we are unaware of any research investigating the effectiveness of the tactic of intentionally framing a cost in terms of a specific (but small) opportunity cost.

If opportunity costs are considered only to the extent they are cued by a decision context, and this consideration influences preferences, then opportunity costs might be another source of preference instability. In fact, when asked to generate just a few uses of a specific dollar amount, we find that consumers change their purchase decisions (Study 5). In another study, we found that this task actually induced consumers to shift many beliefs about money, including how happy or unhappy they would be to find or lose a $20 bill, how much hassle they would endure to save money, how much pay they would trade off for a more satisfying job, and even how important they find financial security.

Of course, weighing the imagined pleasures of alternate uses of money is not the only way consumers can factor price into their decisions -- something they unquestionably do, since their choices are manifestly sensitive to price. We contend that they are generally doing something other than simulating the utility from other uses. Some research implicates "pain of paying" that involves direct psychophysical mapping form expenditure to deterrent magnitude, not mediated by considerations of opportunity costs (Loewenstein, Weber, Hsee, and Welch, 1996; Prelec and Loewenstein, 1998, Rick, Cryder, and Loewenstein, 2007). This is consistent with fMRI evidence showing that responses to monetary losses come primarily from primary rewards centers with little activity in the areas known to process declarative knowledge (Knutson et al 2007) Other research suggests that the value of a deal is evaluated relative to an adopted

reference price (Kahneman and Tversky 1979; Thaler, 1985). Many other types of considerations are also possible, including whether the ratio of prices exceeds some unacceptable threshold, whether the ratio or difference in the prices feels commensurate with the perceived differences in quality, and so on (e.g., Shiv, Edell, and Payne 1997). Whatever the mechanism for considering price, thought protocols suggest it rarely involves explicit reflection about outside goods. In the control condition of study 3, we found that only 13% of participants mentioned outside goods, while other studies reveal even lower rates. Brown (2005) finds that fewer than 10% explanations of willingness to pay include mention outside goods, and, in an analysis of over 5000 verbal protocols, Rick (2008) finds only a handful of comments which resemble an explicit contemplation of opportunity costs. Identifying which specific considerations underlie consumers' response to price is an important topic for further research.

Typical purchase situations may fail to evoke considerations of outside goods because the amount of money consumers have at their disposal is quite vague, and, thus, tradeoffs are rarely explicit. Few consumers could tell you their current net worth with any degree of accuracy, much less specify the expected value of their stream of future earnings (a quantity which, itself, depends on another decision about how much leisure to permit oneself).[3] In the language used by Zauberman and Lynch (2005), monetary budgets have considerable "slack" — any particular expenditure (e.g., having wine with dinner) does not unambiguously jeopardize the satisfaction of any other particular purchase goal (e.g., upgrading one's stereo system). The use of credit cards further increases the perception of slack, because, unlike cash, it fails to create the perception of a temporary budgetary constraint. This may help explain why people spend more

[3] When considered this way, it suggests an alternate framing for opportunity costs. Instead of thinking about expenditure in terms of the other future goods one must forgo to finance it, one could, instead, think about it in terms of how much future leisure one loses.

using credit cards than using cash (Prelec and Simester 2001; Soman and Cheema 2002). Conversely, opportunity costs may be a more central consideration for the truly poor or for those who budget narrowly and impose rigid constraints on the pertinent category of expenditure (see Heath and Soll 1996). Although we do not know whether "tightwads" use mental budgeting to constrain their spending, study 5 suggests that individuals do vary in their propensity to consider opportunity costs. Future research could examine the relationship between wealth, mental budgeting, and the perception of opportunity costs.

Some research suggests that time budgets contain more slack than monetary budgets (Okada and Hoch, 2004; Zauberman and Lynch 2005). Therefore, opportunity costs of time might be even less likely to be considered than opportunity costs of money – except, perhaps, by those who charge by the hour (e.g., lawyers, consultants), who may grow accustomed to converting time into equivalent revenue. Future research could examine when opportunity costs of time are spontaneously considered and how they might be prompted.

It seems natural to assume that frames which foster the recognition of opportunity costs lead to better choices, since the generation of alternatives is universally regarded as an essential component of good decision making (Hammond, Keeney, and Raiffa 2002). However, we've shown that enhancing the salience of opportunity costs will tend to dissuade consumers from selecting the higher quality, more expensive alternative—a decision they rarely regret (Frederick 1998, Kivetz and Keinan 2006). This phenomenon is hinted at by the tagline on a long running commercial for *Acura* automobiles: "Paying for quality can be a difficult decision at first, but over time it gets a lot easier to live with." We agree with *Acura*'s descriptive claim, but not its normative tone. The fact that consumers *don't* regret spending a lot of money does not mean that they *shouldn't* regret it. As noted by Gilovich and Medvec (1995) in their landmark article on

regret, the passage of time impedes our ability to track the cost of a previous action, and the opportunity costs of past expenditures may be neglected even more than the opportunity cost of present expenditures. Future research could explore how consideration of opportunity costs of choices influences short term and long term regret and satisfaction.

Marketing Implications

Given that consumers who are prompted to evaluate an expenditure in terms of its opportunity costs become more price sensitive, manufacturers of less expensive brands interested in increasing price sensitivity may promote their products more effectively by reminding consumers to consider the opportunity costs of the price premium of more expensive competitors. Rather than advertising a brand's low prices in some general way (as when *Pontiac* advertised its vehicles with the tagline: "Your money hasn't gone this far since you lived with your parents."), or emphasizing proportional or cumulative cost savings vis-à-vis some specific competitor (e.g., "20% cheaper than our leading competitor"; "Consumers have saved billions by switching to *MCI*"), firms may better promote low price products by prompting consumers to think about the leftover cash and possible attractive uses for it. For example, *Volkswagen* could emphasize the economy of purchasing a smaller vehicle in terms of the new wardrobe of clothes one would then be able to afford, perhaps illustrated by a smartly dressed driver ferrying her unstylish friends in her new *Beetle*. Consistent with this strategy, an advertisement for *IKEA* furniture in a Singapore newspaper depicted, on the left panel, an unhappy woman standing next to a cabinet containing a single pair of shoes. The caption beneath reads "Customized cabinet ($1670) + 1 pair of shoes ($30) = $1700." By contrast, the right panel depicted a woman beaming at her daughter in front

of a more modest *IKEA* cabinet that was overflowing with shoes. The caption beneath showed the price of the cabinet ($245) plus the price of 48 pairs of shoes ($1440) = $1685.

Our research suggests that another effective promotional tactic for less expensive brands would be to bundle their product with another good that could be purchased for the difference in price between their product and their competitor's more expensive product. For a stylized example, suppose you produce a vodka which is perceived to be somewhat less prestigious than another brand currently retailing for $40. Instead of pricing your brand at $31 in hopes of luring some fraction of the more price sensitive consumers, it may be better to price it at $40 and promote its purchase with, say, a "free" $9 box of *Godiva* chocolates (see also, Chandran and Morwitz 2006). Even though this is, logically, a worse deal for consumers (because it effectively forces any consumer considering your vodka to spend $9 on chocolate, rather than other things), it serves the function of the CD's in the motivating example – it dramatizes the opportunity costs of loyalty to the more expensive brand. In fact, we found evidence that highlighting opportunity costs using a bundle can substantially increase the choice of the cheaper option despite the strict constraint of the use of the savings. In a version of the stereo choice, we found that instantiating the remaining $300 as a $300 VCR increased the choice share of the cheaper option by 20% compared to a description that did not mention (or constrain) the $300 price difference.

Final remarks

One can dispute the normative issue about how much consumers ought to dwell on opportunity costs, but the descriptive phenomenon is clear: reminders about opportunity costs can markedly affect preferences. The relevance of this fact may extend beyond the domain of

consumer products. Excerpts from two political speeches warrant comparison. First, consider the State of the Union address delivered by George W. Bush on January 29, 2002, just prior to the onset of war with Iraq: "*My budget includes the largest increase in defense spending in two decades—because while the price of freedom and security is high, it is never too high. Whatever it costs to defend our country, we will pay*." Contrast this with a passage from Eisenhower's "Chance for Peace Speech," which he delivered as he was leaving office: "*The cost of one modern heavy bomber is this: a modern brick school in more than 30 cities. It is two electric power plants each serving a town of 60,000 people. It is two fine, fully equipped hospitals. It is some 50 miles of concrete highway. We pay for a single fighter with a half million bushels of wheat. We pay for a single destroyer with new homes that could have housed more than 8,000 people*."

Note that Bush, who was making a sales pitch for an expensive war, carefully avoided references to its opportunity costs, while Eisenhower, who was selling peace, liberally invoked them. It is now clear that Eisenhower's speech failed to curb our nation's military spending, but our research suggests that his rhetorical strategy has psychological force. If it can't stop war, it might, at least, be used to increase the market share of affordable stereos.

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